Matrix 3200 & 6400 Series Switchers

FULLY CONFIGURABLE MATRIX SWITCHERS
FROM 16X8 TO 64X64

- I/O sizes from 16x8 to 64x64
- 430 MHz (-3 dB) video bandwidth, fully loaded – wideband models
- 150 MHz (-3dB) video bandwidth, fully loaded – low resolution models
- Compatible with composite video, S-video, component video, HDTV, RGsB, RGBS, RGBHV, and mono or stereo audio
- Field upgradeable and modular design
- Input and output connectors are clearly labeled
- Vertical interval switching
- Triple-Action Switching™ for RGB Delay
- Easy-to-use FPC 1000 LCD Front Panel Controller
- RS-232 & RS-422 Serial Control
- 32 global presets
- 100 rooming memory presets
- Optional redundant power supply

The Extron Matrix 3200 and 6400 Series Matrix Switchers are solutions for large scale routing applications that require up to 64 inputs and 64 outputs. They provide totally customizable and modular switching of composite video, S-video, component video, RGsB, RGBS, RGBHV, and one or two channels of audio. The Matrix 3200 and 6400 Series is ideal for use in large entertainment venues, command and control centers, and other locations where many high resolution signals need to be routed or distributed.

DESCRIPTION

The Extron **Matrix 3200** and **6400 Series** Matrix Switchers are solutions for large scale routing applications that require up to 64 inputs and 64 outputs. With user-friendly control via the front panel or optional control panels or keypads, the Matrix 3200 and 6400 switchers provide totally customizable and modular switching of composite video, S-video, component video, RGsB, RGBS, RGBHV, and one or two channels of audio. With an RGB bandwidth of 430 MHz (-3 dB) fully loaded, the Matrix 3200 and 6400 Wideband Series can maintain the integrity of any routed signal.

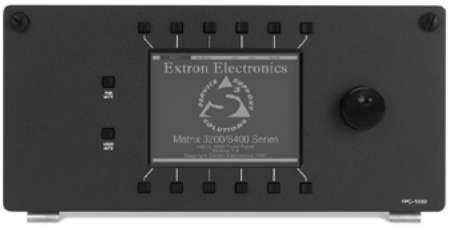
Matrix 3200 and 6400 Series matrix switchers include configurations of wideband, low resolution video, sync, and stereo or mono audio. Each model allows for 16x8 switching with the flexibility to upgrade to full 32x32 or 64x64 routing applications. With 128 BNC connectors on the rear panel and modular internal card slots ready to be filled as needed, the Matrix 6400 switchers can grow to accommodate any system—even systems that are still expanding.

Rooming Presets and Virtualization
Using a feature called "rooming," each Matrix 3200 and 6400 switcher can be programmed to group multiple outputs to specific rooms, allowing them to have their own presets. Each room can consist of up to 16 signals and each matrix can support up to 10 rooms. A total of 100 room presets are available, providing added flexibility and convenience, particularly in systems where switching is required between several locations. Once a room has been configured and stored, it is switched independently of other rooms so that signals sent to one room will never walk in on another room.

Rooming is made possible by user-defined virtual maps, which ascribe "locality" to the physical inputs and outputs of the Matrix 3200 and 6400 Switchers. Virtual mapping makes it possible to configure the switchers in unique ways, dictated by each virtual input/output, i.e., the assignment of each individual connector and each group of connectors called a virtual plane. The Extron virtualization/control software makes these configurations possible. The software easily translates the appropriate virtual map into the switcher's memory with minimal effort on the part of the installer.

Rooming presets go beyond normal matrix switching capabilities, which are offered with the Matrix 3200 and 6400 switchers as global presets. These global presets can be set to define configurations of specific inputs to any specific combination of outputs or to all outputs. Rooming presets and global presets can be programmed and recalled at the front panel or by remote.

Control Options
The Matrix 3200 and 6400 Series support a variety of control options. The FPC 1000 front panel controller is designed to control up to six



FPC 1000

MKP 1000 Remote

MCP 1000

BME - Basic Module Enclosures as a single device. RS-232/RS-422 control and programming of third party control systems is easy and quick with Extron's SIS™ - Simple Instruction Set. In addition, the Matrix 3200 and 6400 Series supports a range of optional remote control panels and keypads.

FEATURES

- **430 MHz (-3 dB) RGB video bandwidth, fully loaded - wideband models** – Designed for the most demanding, very high resolution computer-video rates without signal degradation. The Matrix 3200 & 6400 Series provide a minimum 430 MHz (-3 dB) of RGB video bandwidth at full performance capability when one input drives all outputs.
- **150 MHz (-3 dB) video bandwidth, fully loaded - low resolution models** – Ensures switching and distribution of video signals without degradation. Matrix 3200 & 6400 Series matrix switchers provide a minimum 150 MHz (-3 dB) of video bandwidth at full performance capability when one input drives all outputs.
- **Compatible with composite video, S-video, component video, HDTV, RGsB, RGBS, RGBHV, and/or balanced/unbalanced mono or stereo audio**
- **Field upgradeable and modular design** – Matrix 3200 & 6400 matrix switchers provide the highest level of cost-effectiveness, flexibility, and expandability by allowing users to purchase only the modules required for their systems. Additional modules may be added at any time without having to send the unit back to the factory for expansion or application change.
- **100 rooming memory presets** –Provides presets for up to 10 rooms for a total of up to 100 rooming presets for added flexibility and control in routing signals.
- **Triple-Action Switching™ for RGB Delay** – Blanks the screen when switching to a new source. The new sync signals precede the RGB signals, so there is no glitch shown during the transition. The time delay between the RGB and sync signals is adjustable up to five seconds through front panel or serial control.
- **Optional redundant power supply** – An additional power supply may be internally mounted to give the Matrix 3200 & 6400 matrix switchers a backup power supply. This feature may be necessary in critical applications where power reliability is a crucial factor.
- **Easy-to-use FPC 1000 LCD Front Panel Controller** – The FPC 1000 has a large LCD window that allows direct access and total control over all presets and switching functions. Menus in the FPC 1000 provide an intuitive interface for easy setup and programming.
- **32 global presets** – Frequently-used I/O configurations may be saved and recalled, either from the QuickSwitch Front Panel Controller (QS-FPC™), IP Link, or serial control. This time-saving

PART NUMBERS

Matrix 3200 and 6400 Part Numbers

Wideband Basic Module Enclosures

The Matrix 3200 and 6400 Wideband series offer 430 MHz (-3dB) bandwidth when fully loaded, assuring that the original signal integrity is maintained.

Physical Outputs	Matrix 3200 Wideband - 5U Physical Inputs		Matrix 6400 Wideband - 7U Physical Inputs			
	16x	32x	16x	32x	48x	64x
8	60-251-AA	60-251-BA	60-250-AA	60-250-BA	60-250-CA	60-250-DA
16	60-251-AB	60-251-BB	60-250-AB	60-250-BB	60-250-CB	60-250-DB
24	60-251-BC	60-251-DC	60-250-BC	60-250-DC	60-250-FC	60-250-HC
32	60-251-BD	60-251-DD	60-250-BD	60-250-DD	60-250-FD	60-250-HD
40	- - -	- - -	60-250-CE	60-250-FE	60-250-IE	60-250-LE
48	- - -	- - -	60-250-CF	60-250-FF	60-250-IF	60-250-LF
56	- - -	- - -	60-250-DG	60-250-HG	60-250-LG	60-250-PG
64	- - -	- - -	60-250-DH	60-250-HH	60-250-LH	60-250-PH

NOTE: Need more than one enclosure for multiple video planes

Video Basic Module Enclosures

The Matrix 3200 and 6400 Video series offer 150 MHz (-3dB) bandwidth for composite video, S-video, component video, and HDTV applications.
The units have video genlock capabilities which allow for vertical interval switching.

Physical Outputs	Matrix 3200 Video - 5U Physical Inputs	Matrix 6400 Video - 7U Physical Inputs
	32x	64x
8	60-253-DA	60-252-HA
16	60-253-DB	60-252-HB
24	60-253-DC	60-252-HC
32	60-253-DD	60-252-HD
40	- - -	60-252-HE
48	- - -	60-252-HF
56	- - -	60-252-HG
64	- - -	60-252-HH

NOTE: Need more than one enclosure for multiple video planes

Sync Basic Module Enclosure

The Matrix 6400 Sync switchers are capable of handling AGC to TTL level sync for H/V, separate H and V. This model supports both Matrix 3200 and Matrix 6400 wideband switching systems.

Physical Outputs	Physical Inputs
	64x
64	60-254-PH

NOTE: Need more than one enclosure for multiple sync planes larger than 32x32

Audio Basic Module Enclosures

The Matrix 6400 Audio switchers are fully configurable for 8x8 to 64x64 mono or stereo audio (balanced or unbalanced).
These units allow adjustable audio gain/attenuation of audio from the front panel controls (FPC 1000) or RS-232/422.

Physical Outputs	Matrix 6400 Audio - 5U Physical Inputs							
	8x	16x	24x	32x	40x	48x	56x	64x
8	60-256-AA	60-256-BA	60-256-CA	60-256-DA	60-256-EA	60-256-FA	60-256-GA	60-256-HA
16	60-256-AB	60-256-BB	60-256-CB	60-256-DB	60-256-EB	60-256-FB	60-256-GB	60-256-HB
24	60-256-AC	60-256-BC	60-256-CC	60-256-DC	60-256-EC	60-256-FC	60-256-GC	60-256-HC
32	60-256-AD	60-256-BD	60-256-CD	60-256-DD	60-256-ED	60-256-FD	60-256-GD	60-256-HD
40	60-256-AE	60-256-BE	60-256-CE	60-256-DE	60-256-EE	60-256-FE	60-256-GE	60-256-HE
48	60-256-AF	60-256-BF	60-256-CF	60-256-DF	60-256-EF	60-256-FF	60-256-GF	60-256-HF
56	60-256-AG	60-256-BG	60-256-CG	60-256-DG	60-256-EG	60-256-FG	60-256-GG	60-256-HG
64	60-256-AH	60-256-BH	60-256-CH	60-256-DH	60-256-EH	60-256-FH	60-256-GH	60-256-HH

NOTE: For mono audio model part numbers, replace 60-256- in above table
with 60-529- (i.e., 60-256-AA would become 60-529-AA for mono audio)

FEATURES - Cont.

feature allows you to set up I/O configurations and store them in memory for future use.

- **Vertical interval switching** – Enables smooth, seamless transitions when switching between synchronous video sources.
- **Input and output connectors are clearly labeled** – All connectors are clearly labeled for easy installation. With the Extron virtualization/control software, a visual map can be printed for easy representation of the virtual I/Os. This feature reduces the time required for setup and programming.
- **RS-232 and RS-422 serial control port** – Using serial commands, the Matrix 3200 & 6400 Series can be controlled and configured via the included Windows-based control software, or integrated into third-party control systems. Extron products use the SIS - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming.
- **Extron virtualization/control software** – Extron has developed a Windows®- based software that provides the ability to mix and match inputs to outputs. This program, shipped with every Matrix 3200 & 6400 matrix switcher, makes I/O configuration simple because it uses graphic icons and icon labeling capabilities. More importantly, the software also allows users to configure the switcher via an emulation mode even if the switcher is not available. Once the matrix is built with the software and the configuration is saved, the switcher is ready to operate.
- **Optional control panels and keypads** – Provide the flexibility to control a Matrix 3200 & 6400 Series matrix switcher from a remote location.
- **RGB and audio mute**
- **Balanced or unbalanced mono or stereo audio** – The Matrix 6400 audio matrix switchers offer the flexibility for both balanced or unbalanced audio signals.
- **Audio input gain and attenuation** – Allows users to set the level of gain or attenuation for each audio input channel, eliminating noticeable volume differences when switching between sources.
- **Audio breakaway** – Provides the capability to break an audio signal away from its corresponding video signal, allowing the audio channels to be operated as a separate matrix switcher.
- **Trouble status indication** – Matrix 3200 & 6400 matrix switchers track status indicators at all times, and with the FPC 1000, the installer can monitor RS-232 and RS-422 communications from and to the unit. This saves valuable time in troubleshooting.
- **Front panel security lockout** – Prevents unauthorized use when the matrix switcher is installed in an unsecured environment where easy access is not desirable. In lock-out mode, a special button combination is required to operate the front panel.
- **Rack-mountable metal enclosure** – Matrix 3200 & 6400 matrix switchers are rack-mountable in any conventional 19-inch rack using included hardware.
- **Internal international power supply**
- **Optional redundant power supply**

SPECIFICATIONS

VIDEO — WIDEBAND VIDEO BME

Routing	16 x 8 or larger matrix up to 32 x 32 or 64 x 64, depending on model and configuration
Gain	Unity
Bandwidth	
Matrix Wideband	430 MHz (-3 dB), fully loaded 0 MHz to 10 MHz no more than +0.1 dB to -0.1 dB 0 MHz to 130 MHz no more than +4 dB to -0.25 dB
Phase between I/Os	<1.28° at 3.58 MHz
Differential phase error	0.1%, 3.58 MHz and 4.43 MHz
Differential gain error	0.1°, 3.58 MHz and 4.43 MHz
Max. propagation of delay	5 ns typical (±1 ns)
Crosstalk	-80 dB @ 1 MHz, -62 dB @ 10 MHz, -52 dB @ 30 MHz
Switching speed	200 ns (max.)

VIDEO — LOW RESOLUTION VIDEO BME

Routing	16 x 8 or larger matrix up to 32 x 32 or 64 x 64, depending on model and configuration
Gain	Unity
Bandwidth	
Matrix Low Res.	150 MHz (-3 dB), fully loaded 0 MHz to 10 MHz no more than +0.1 dB to -0.1 dB 0 MHz to 30 MHz no more than +0.5 dB to -0.5 dB
Crosstalk	80 dB @ 1 MHz, -62 dB @ 10 MHz, -52 dB @ 30 MHz
Switching speed	200 ns (max.)

VIDEO INPUT — WIDEBAND VIDEO BME

Number/signal type	Up to 32 or 64 (varies with configuration) RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, composite video
Connectors	BNC female (quantity varies with configuration)
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels	Analog: 0.5 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz

VIDEO INPUT — LOW RESOLUTION VIDEO BME

Number/signal type	Up to 32 or 64 (varies with configuration) RGsB, RsGsBs, component video, S-video, composite video, HDTV
Connectors	BNC female (quantity varies with model)
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum level(s)	Analog: 0.5 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz
External sync (genlock)	0.3 V to 12 Vp-p, 75 ohms

VIDEO OUTPUT — WIDEBAND VIDEO BME

Number/signal type	Up to 32 or 64 (varies with configuration) RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, composite video
Connectors	BNC female (quantity varies with configuration)
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Maximum level	2 Vp-p
Impedance	75 ohms
Return loss	-25 dB to input section up to 50 MHz
DC offset	±10 mV typical with input at 0 offset
Switching type	Triple-Action™
Slew rate	>200 V/ms

SPECIFICATIONS - Cont.

VIDEO OUTPUT — LOW RESOLUTION VIDEO BME

Number/signal type	Up to 32 or 64 (varies with configuration) RGsB, RsGsBs, component video, S-video, composite video, HDTV
Connectors	BNC female (quantity varies with configuration)
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels	0.5 V to 1.5 Vp-p
Impedance	75 ohms
Return loss	-40 dB to input section at 3.58 MHz/4.43 MHz
DC offset	±10 mV maximum with input at 0 offset
Switching type	Vertical interval
Slew rate	>200 V/ms

SYNC — SYNC BME

Input and output types	Software configurable for RGBHV or RGBS
Sync connectors	Up to 64 or 32 BNC female (quantity varies with configuration)
Input level	0.5 V to 5 Vp-p (4 Vp-p nominal)
Output level	5 Vp-p
Gain	AGC to TTL : 4.0 V to 5.0 Vp-p
Input impedance	Inputs 1 - 16: 510 ohms or 75 ohms, switchable Inputs 17 - 64: 510 ohms
Output impedance	75 ohms
Horizontal frequency	15 kHz to 150 kHz
Vertical frequency	30 Hz to 150 Hz
Polarity	Positive or negative (follows input)

AUDIO — AUDIO BME

Routing	Up to 64 x 64 mono or stereo matrix (in increments of 8), balanced/unbalanced
Gain (selectable per output)	Unbalanced output: 0 dB (as shipped), or -6 dB (jumper-selectable) Balanced output: +6 dB (as shipped), or 0 dB (jumper-selectable)
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 20 Hz to 20 kHz, +15 dBu input, +21 dBu output nominal level
S/N	>85 dB, balanced, at rated maximum output
Crosstalk	<-70 dB @ 20 Hz to 20 kHz, fully loaded
Stereo channel separation	>70 dB @ 20 Hz to 20 kHz
CMRR	>+75 dB, 20 Hz to 20 kHz

AUDIO INPUT — AUDIO BME

Number/signal type	(8 to 64) (in increments of 8) mono or stereo, balanced/unbalanced
Connectors	(8 to 64) 3.5 mm captive screw connector, 5 pole (stereo) or 3 pole (mono)
Impedance	>10k ohms unbalanced/balanced, DC coupled
Nominal level	-10 dBV (316 mV)
Maximum level	+21.5 dBu, (balanced or unbalanced) at 1%THD+N
Input gain adjustment	-15 dB to +9 dB, adjustable per input via RS-232 control or front panel

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈2 dBu

AUDIO OUTPUT — AUDIO BME

Number/signal type	Up to 64 (in increments of 8) mono or stereo, balanced/unbalanced
Connectors	3.5 mm captive screw connectors, 5 pole (stereo) or 3 pole (mono) (quantity varies with configuration)
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+26.0 dBu, balanced at 1%THD+N
Maximum level (600 ohm)	>+24.0 dBm, balanced at 1%THD+N

CONTROL/REMOTE — SWITCHER

Serial control port	RS-232 or RS-422, 9-pin female D connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
System intercommunications	2 RJ-11 connectors
Remote keypad control	(2) 5 mm, 5-pole captive screw connectors
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

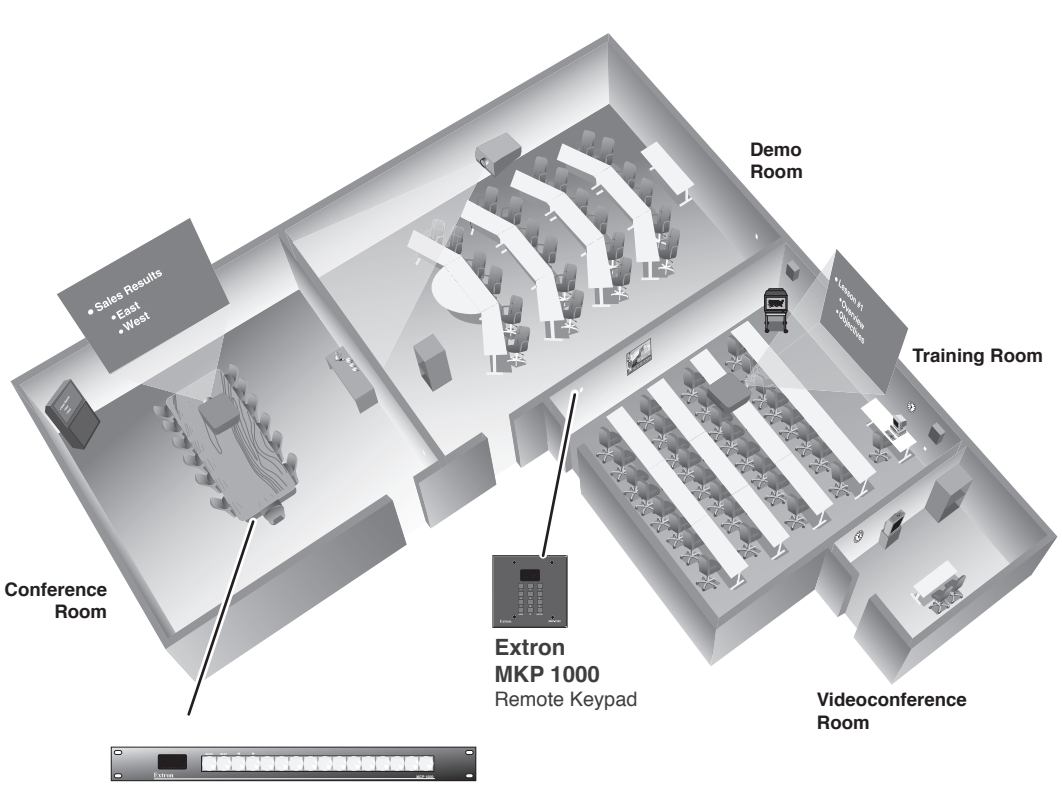
GENERAL

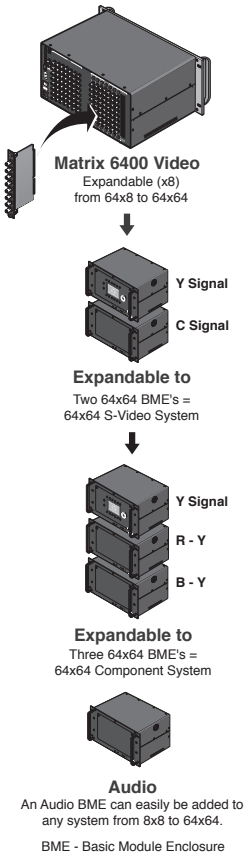
Power	100 VAC to 240 VAC, 50/60 Hz; internal, autoswitchable
Matrix 6400 wideband	110 watts at 115 VAC, 60 Hz
Matrix 3200 wideband	50 watts at 115 VAC, 60 Hz
Matrix 6400 video	90 watts at 115 VAC, 60 Hz
Matrix 3200 video	40 watts at 115 VAC, 60 Hz
Matrix 6400 sync	65 watts at 115 VAC, 60 Hz
Matrix 6400 audio	195 watts at 115 VAC, 60 Hz
NOTE: A redundant power supply is available.	
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes
Enclosure type	Metal
5U dimensions	8.75" H x 17.0" W x 14.1" D (5U high, full rack wide) 22.2 cm H x 43.2 cm W x 35.8 cm D (Depth excludes connectors. Width excludes rack ears.)
7U dimensions	12.25" H x 17.0" W x 14.1" D (7U high, full rack wide) 31.1 cm H x 43.2 cm W x 35.8 cm D (Depth excludes connectors. Width excludes rack ears.)
Shipping/product weight, rack height	
Matrix 6400 wideband	42 lbs (20 kg)/29.1 lbs (13.2 kg), 7U
Matrix 3200 wideband	30 lbs (14 kg)/22.2 lbs (10.1 kg), 5U
Matrix 6400 video	33 lbs (15 kg)/25.3 lbs (11.5 kg), 5U
Matrix 3200 video	30 lbs (14 kg)/22.4 lbs (10.2 kg), 5U
Matrix 6400 sync	44 lbs (20 kg)/31.4 lbs (14.2 kg), 7U
Matrix 6400 audio	38 lbs (18 kg)/28.4 lbs (12.9 kg), 5U
DIM weight, International (all models)	44 lbs (20 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

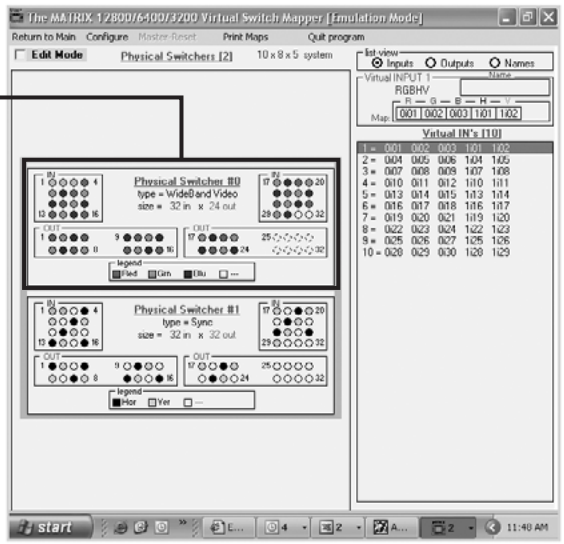
Specifications are subject to change without notice.

DIAGRAMS





Extron Matrix 6400
Matrix Switcher



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07-03
68-379-01
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